

3. The invention defined in claim 2, wherein said second control means comprises a comparison circuit coupled to said circuit means and to said position sensing means and operative to terminate the screwback operation in response to the achievement by said ram position signal of a predetermined relationship with a second reference signal comprising said error signal.

4. The invention defined in claim 3, wherein said third control means comprises a comparison circuit coupled to said circuit means and to said position sensing means and operative to terminate the pullback of said ram in response to the achievement by said ram position signal of a predetermined relationship with a third reference signal comprising said error signal.

5. The invention defined in claim 1, wherein said first control means comprises a comparison circuit coupled to said circuit means and to said position sensing means and operative to reduce said hydraulic pressure upon said ram from a first, higher value to a second, lower value in response to the achievement by said ram position signal of a predetermined relationship with a third reference signal comprising said error signal.

6. The invention defined in claim 5, wherein said second control means comprises a comparison circuit coupled to said circuit means and to said position sensing means and operative to terminate the screwback operation in response to the achievement by said ram position signal of a predetermined relationship with a second reference signal comprising said error signal.

7. The invention defined in claim 6, wherein said third control means comprises a comparison circuit operative to terminate the pullback of said ram in response to the achievement by said ram position signal of a predetermined relationship with a third referenced signal.

8. A control system for controlling the operation of an injection molding machine including a ram and having drive means for rotating, and hydraulic means for advancing and withdrawing said ram comprising:
position sensing means for producing a signal indicative of ram position;
reference means for producing a first reference signal representative of a desired final ram position;
comparison means coupled to said position sensing

means and said reference means for producing a ram position error signal;
an integrate-and-hold circuit coupled to said comparison means for periodically receiving a signal representative of ram position error and outputting a signal representative of accrued position error;
first timer means for periodically energizing said integrate-and-hold circuit;

first control means for causing pressure exerted by said ram to decline from a first, higher value to a second, lower value;

second control means coupled to said integrate-and-hold circuit for terminating the operation of said drive means in response to a signal outputted by said integrate-and-hold circuit; and

third control means coupled to said integrate-and-hold circuit for establishing a point of maximum withdrawal of said ram in response to a signal outputted by said integrate-and-hold circuit.

9. The invention defined in claim 8, wherein said final ram position comprises a final cushion point.

10. The invention defined in claim 9, wherein said first control means comprises second timer means for effecting a decline in said applied pressure a predetermined time after initiation of ram advancement.

11. The invention defined in claim 9, wherein said first control means comprises a comparison circuit coupled to said integrate-and-hold circuit for establishing a point at which pressure exerted by said ram is reduced from a first, higher value to a second, lower value.

12. The invention defined in claim 11, wherein said first, second, and third control means comprise comparison circuits, each of said comparison circuits having a first input coupled to said position sensing means and a second input coupled to said integrate-and-hold circuit.

13. The invention defined in claim 12, further including first, second, and third summing means coupled to the second inputs of said first, second and third control means respectively for combining the signal outputted by said integrate-and-hold circuit and first, second, and third reference signals.

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